

AL KASIK WATER STORAGE TANKS
AL KASIK MILITARY TRAINING BASE
AL KASIK, IRAQ

SIGIR PA-06-071
JANUARY 08, 2007

Report Documentation Page				Form Approved OMB No. 0704-0188	
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1. REPORT DATE 08 JAN 2007		2. REPORT TYPE		3. DATES COVERED 00-00-2007 to 00-00-2007	
4. TITLE AND SUBTITLE Al Kasik Water Storage Tanks Al Kasik Military Training Base. Al Kasik, Iraq				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Office of the Special Inspector General for Iraq Reconstruction, 400 Army Navy Drive, Arlington, VA, 22202				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 29	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			



SPECIAL INSPECTOR GENERAL FOR IRAQ RECONSTRUCTION

January 08, 2007

MEMORANDUM FOR DIRECTOR, IRAQ RECONSTRUCTION MANAGEMENT
OFFICE
COMMANDING GENERAL, MULTI-NATIONAL
SECURITY TRANSITION COMMAND - IRAQ
COMMANDING GENERAL, GULF REGION DIVISION,
U.S. ARMY CORPS OF ENGINEERS
DIRECTOR, AIR FORCE CENTER FOR ENVIRONMENTAL
EXCELLENCE

SUBJECT: Report on Project Assessment of the Al Kasik Water Storage Tanks, Al Kasik
Military Training Base, Al Kasik, Iraq (Report Number SIGIR-PA-06-071)

We are providing this project assessment report for your information and use. We assessed the design and construction work being performed at the Al Kasik Water Storage Tanks, Al Kasik Military Training Base, Al Kasik, Iraq to determine its status and whether objectives intended will be achieved. This assessment was made to provide you and other interested parties with real-time information on a relief and reconstruction project underway and in order to enable appropriate action to be taken, if warranted. The assessment team included an engineer/inspector and an auditor/inspector.

This report does not contain any negative findings. As a result, no recommendations for corrective action were made and further management comments are not requested.

We appreciate the courtesies extended to our staff. If you have any questions please contact Mr. Brian Flynn at brian.flynn@sigir.mil or at 914-360-0607. For public or congressional queries concerning this report, please contact SIGIR Congressional and Public Affairs at publicaffairs@sigir.mil or at (703) 428-1100.

Stuart W. Bowen, Jr.
Inspector General

Special Inspector General for Iraq Reconstruction

SIGIR PA-06-071

January 08, 2007

Al Kasik Water Storage Tanks Al Kasik Military Training Base, Iraq

Synopsis

Introduction. This project assessment was initiated as part of our continuing assessments of selected Multi-National Security Transition Command - Iraq reconstruction activities. The overall objectives were to determine whether selected sector reconstruction contractors were complying with the terms of their contracts or task orders, and to evaluate the effectiveness of the monitoring and controls exercised by administrative quality assurance and contract officers. We conducted this project assessment in accordance with the Quality Standards for Inspections issued by the President's Council on Integrity and Efficiency. The assessment team included an engineer/inspector and an auditor/inspector.

The objective of the project was to construct a potable water storage tank system with a capacity of no less than 7.7 million liters. In addition, all connecting piping valves, meters, pumps, and controls required to incorporate the Water Storage Tank (WST) system into the existing base potable water distribution and treatment system were included in the project's requirements.

Project Assessment Objectives. The objective of this project assessment was to provide real-time relief and reconstruction project information to interested parties in order to enable appropriate action, when warranted. Specifically, we determined whether:

1. Project components were adequately designed prior to construction or installation;
2. Construction or rehabilitation met the standards of the design;
3. The Contractor's Quality Control and the United States Government's Quality Assurance programs were adequate;
4. Project sustainability was addressed; and
5. Project results were consistent with original objectives.

Conclusions. The assessment determined that:

1. The contract's design and specifications were specific enough to construct the facility because extensive and complex design work was not required to construct the project consisting of eight similar water tanks. At the time of the assessment team's site visit, construction of eight 1 million liter water tanks was in various stages, all with successful results. As a result, there is a strong likelihood that the project, if completed, will be completed without major issues related to inadequate design.
2. At the time of the site visit, construction work completed complied with the design standards for the Al Kasik Water Storage Tanks project. Based on the assessment team's review of relevant documentation, discussions conducted with informed contractor and government personnel, and an on-site visit, the contractor's procedures to manage construction activity appeared effective. Quality Control, Quality Assurance, and numerous test reports confirmed that the

project has been effectively monitored. As a result, the likelihood is high that project construction, if completed, will comply with design standards.

3. The contractor's Quality Control and the U.S. Government's Quality Assurance programs were adequate because the quality control and quality assurance systems employed by the contractor and government ensured effective Quality Management during construction. In accordance with Task Order requirements, the contractor submitted a timely Quality Control Program plan that included a sufficiently detailed Construction Quality plan and a Health and Safety plan before construction started in September 2005. In addition, the government's Quality Assurance representative provided sufficient and effective oversight of the Quality Control function. Quality Assurance reports were well written and descriptive of meaningful events and the project's overall status. If the project is completed and current procedures are followed, the construction will very likely meet contract requirements.
4. Project sustainability was adequately addressed in the Task Order. The construction of the Water Storage Tanks consisted of a system of eight tanks of the same design and size. By their design, covered non-pressurized water holding tanks offer a high degree of sustainability when properly constructed. Once the system of tanks is filled with water, it is designed to remain in place and supply clean water to the water distribution system. If completed as designed, the project will likely be sustainable for years to come.
5. When completed, the system of eight water storage tanks should meet its intended objective to store and supply ample water for the water distribution system. The desirable outcome will result because of effective project oversight of construction activities by contractor Quality Control and government Quality Assurance personnel. In addition, the project was adequately planned and designed before construction started. If built to the current standards of construction, the water storage tanks should operate efficiently and improve overall water distribution within the service area.

Recommendations and Management Comments. This report does not contain any negative findings or recommendations for corrective action. Accordingly, management comments were not required and none were offered by management. The results of this assessment were discussed with the Air Force Center for Environmental Excellence Program Manager and a Multi-National Security Transition Command - Iraq Engineering Staff Section (J-7) representative at the conclusion of fieldwork. In addition, the Assessment Team discussed the positive conditions reported with Coalition Military Assistance Training Team / Regional Support Unit personnel before departing Al Kasik. We appreciated the courtesies extended by Coalition Military Assistance Training Team / Regional Support Unit and contractor personnel. In addition, their help with billeting and travel to the site made for an effective and efficient site visit.

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Introduction

Objective of the Project Assessment

The objective of this project assessment was to provide real-time relief and reconstruction project information to interested parties in order to enable appropriate action, when warranted. Specifically, we determined whether:

1. Project components were adequately designed prior to construction or installation;
2. Construction or rehabilitation met the standards of the design;
3. The Contractor's Quality Control (QC) and the United States Government's Quality Assurance (QA) programs were adequate;
4. Sustainability was addressed; and
5. Project results were consistent with original objectives.

Pre-Site Assessment Background

Contract, Task Order and Costs

Basic Contract FA8903-04-D-8669 / Task Order 0025 / Modification 004, effective 22 July 2005, authorized AMEC Earth and Environmental, Inc. to perform work in accordance with the Statement of Work (SOW), dated 30 June 2005. Task Order (TO) 0025 was a cost-plus-fixed-fee (CPFF) contract and work on the Water Storage Tanks (WST) was estimated to cost and be funded in the approximate amount of \$4.9 million. The basic contract, task order, and modification were issued by the Air Force Material Command (AFMC) and administrated by the Defense Contract Management Agency (DCMA).

Project Objective

The 30 June 2005 SOW required the contractor to construct a potable water storage tank system with a capacity of no less than 7.7 million liters. In addition, all connecting piping valves, meters, pumps, and controls required to incorporate the WST system into the existing base potable water distribution and treatment system were included in the SOW. The final design of the Al Kasik Water Storage Tank system consisted of eight separate tanks, with an individual tank capacity of approximately 1 million liters.

Description of the Facility (pre-construction)

The contractor's construction manager advised that pre-construction water storage facilities at the Al Kasik Army base were inadequate in terms of capacity and in poor condition.

Scope of Work of the Task Order

The SOW laid out the contractor's specific roles and responsibilities for the WST project. The SOW detailed the work, specifications, and testing requirements. The majority of the physical construction of the project was devoted to building a system of eight equally configured tanks to yield a minimum system capacity of approximately 7.7 million liters. In addition, piping, valves, meters, pumps, and control equipment required to incorporate the system of storage tanks with the water distribution and treatment systems were included in the SOW.

Site Assessment

Work Completed

At the time of the assessment team's site visit, the project was reported as 57% complete by the AFCEE/VIAP¹ Quality Assurance Representative (QAR). Although the TO's Field Period of Performance (POP) had been extended to 19 September 2006, the contractor's construction manager stated that the WST project would likely not be completed by then. QA reports confirmed that substantial rain in January, February, and March 2006 contributed to delayed WST project progress (Site Photo 1). In addition, the contractor's construction manager stated that there had been unspecified delays attributable to equipment and material unavailability. At the time of the assessment team's site visit, the sub-contractor was waiting for a sand blaster needed to clean all steel before a protective/finish coating (epoxy paint) could be applied. In addition, the contractor's construction manager stated that a shortage of welders skilled enough to pass a welding test administered by the contractor's QC manager had been a persistent problem.



**Site Photo 1. WST site conditions following overnight rain.
(Photo from QA Report dated 3 Feb. 2006)**

¹ Under a separate contract, AFCEE onsite quality assurance services were provided by Versar International Assistance Projects Iraq (VIAP).



Site Photo 2. Workers have to re-dig footings after heavy rains.
(Photo from QA Report dated 17 Mar 2006)

Work in Progress

Based on the Statement of Work, the contractor was required to construct a potable water storage tank system with a capacity of no less than 7.7 million liters. In addition, requirements to provide all connecting piping valves, meters, pumps, and controls required to incorporate the WST system with existing base potable water distribution and treatment system were included in the SOW. The contractor's final design consisted of a system of eight separate, but comparable, tanks with an individual tank capacity of approximately 1 million liters. In addition, the tanks were designed to be fabricated on site by the contractor. Tank construction was divided into four major stages: concrete foundation, welded steel floor, welded steel walls, and welded steel roof. At the time of the assessment team's site visit, foundation, floor, and wall work was in progress. Accordingly, our observations are described in the following sections: Tank Foundations, Tank Floors, and Tank Walls.

Tank Foundation

Tank foundation construction started with a concrete foundation, shown in Site Photos 3 and 4. Crushed course aggregate shown in Site Photo 5 was used for on-site production of foundation concrete. To conform to design standards, on-site concrete mixing included the aggregate in a prescribed combination with cement and water. The course aggregate used varied in size from small stone to larger stone, up to approximately 30 mm in diameter. In addition, the crushing process created aggregate with rough asymmetrical surfaces to facilitate effective binding in the concrete when combined with proper amounts of cement and water. We reviewed laboratory tests and confirmed that the concrete met or exceeded strength standards.



Site Photo 3. Steel floor placed on concrete foundation.



Site Photo 4. Steel floor placed on concrete foundation



Site Photo 5. Crush aggregate used in concrete mix for tank foundation.

Tank Floors

The floors and walls were comprised of flat sheets of 8 mm thick S 235 JR steel joined together with welds using E6013 welding rod. Much like a gig-saw puzzle, flat S 235 JR 8 mm sheets were cut and pieced together to form the tank floor or annular plate. A QC report photo dated May 6, 2006 shows steel sheets cut and pieced together to ensure proper fit (Site Photo 6). After the fit was approved by the contractor's QC manager, the sheets were joined together by welding the entire length of all seams to form the water tank's floor / annular plate. An example of welded annular plates on a tank foundation is shown in Site Photo 7.



Site Photo 6. Sheets of steel were fitted together prior to welding.



Site Photo 7. After fitting, the sheets were welded along seams to form a sealed tank floor.

After the final welds were completed on the annular steel plating, a vacuum test was performed. A vacuum box was used to test the effectiveness of the welds on each floor plate weld. In Site Photo 8, a worker used a vacuum box (red device) after soapy water was applied to the surface area around the weld to test for leaks. The test operator placed the vacuum box with rubber base over the soapy water to create an air tight seal. To complete the test, the vacuum valve on the side of the box was opened to evacuate the inner chamber. The test operator watched through the box's window as the vacuum was applied. Along with a loss in measured vacuum, leaks visually appeared as bubbles under the window.



Site Photo 8. A vacuum box was used to test for leaks along floor welds.

Site Photo 9 displays a successful annular plate weld that passed the vacuum test. Visual inspection by the QC manager pointed out that the uniform thickness, adequate penetration, and uniform rounded swirls of the bead indicated a good weld.



Site Photo 9. High quality annular plate weld.

Accordingly, all welds that leaked were scheduled for repair and retested in compliance with the contractor's welding procedures. All leaks were marked with chalk and stones to ensure that leaks were located and properly repaired before retesting. Site Photos 10 and 11 show stones and chalk used to mark leaks in the steel plating.



Site Photos 10 and 11. Stones and chalk mark leaks in the steel plating.

Tank Walls

After fabricating and successful testing of the annular plating welds, the tank walls were installed. The contractor fitted an 18 inch overlap on two sections of steel shell plates. The tank walls were being built from sheets welded in place. Site Photo 12 shows workers positioning the first steel plate section to form the tank wall. Also evident in Site Photo 12 is the 18 inch overlap of shell plates.



Site Photo 12. Steel plates were fabricated and placed on the base plates to form the tank's wall.

In order to anchor the sheets to the base and fasten adjacent sections, tack welds were utilized. Site Photo 13 shows tack welds along the base of the tank while Site Photo 14 shows the initial fastening of adjacent steel section of wall plating.



Site Photo 13. Tack welds temporarily attach wall plate to floor.



Site Photo 14. Tack welds temporarily attach wall plates together.

Installation of the steel tank walls or shell plates consisted of fitting and welding together each steel plate. The contractor's standard for welding the steel plate shells to the annular plates requires two runs of welds on the inside and the outside of the tank. The first run of both pairs was a 3.25 mm run on the inside of the tank followed by a second run of 4 mm, also on the inside of the tank. Welding standards required an E6013 electrode for this type of application.

After the first two runs were completed, a diesel penetrant test was performed to determine if the welds held a seal. That test consisted of application of light diesel fuel (kerosene) to the weld's surface. Penetration of diesel through the weld indicated failure or leakage. Procedures dictated that all leaks would be repaired and retested. Site Photo 15 shows where the diesel fuel passed through the weld after a 24-hour dwell² period on the outside of the tank. Site Photo 16 reveals a leak in the inner weld of the after the 24-hour dwell period.

² Dwell period is the time between application of the diesel fuel and reading the test.



Site Photo 15. Diesel penetrated the welds within 24 hours of test.



Site Photo 16. Diesel penetrated the welds within 24 hours of test.

Steel braces were tack welded to the annular plate along with the steel plate walls in order to bear the horizontal forces on the steel shell plates. The steel braces supported the shell plate's transverse load for the placement of welds along

unwelded sections of the steel sheets. An example of the internal bracing supporting the tank wall sections is shown in Site Photo 17.



Site Photo 17. Inner tank bracing supports the attached steel shell plates.

The contact edges of the steel beams were tack welded to the adjacent plates. Site Photos 18 and 19 show the top and bottom tack welds used to attach the steel supports to the tank base and walls. Vertical and horizontal runs (welded seams) were required to attach the plates that make-up the tank's walls. Supporting steel beams were removed once support was no longer needed and welds were secure.



Site Photo 18. Top ends of steel beams are tack welded to the wall plates.



Site Photo 19. Bottom ends of steel beams are tack welded to the floor plates.

Two sets of welds were placed on the outside of the tank with a grinding and testing step in between each. The third run was placed on the inside of the tank. The welding electrode used for all welds was E6013 electrode. The width standard for beads in all welds was 3.25 mm. Between the first two runs, the welds were cleaned to remove powder residue from the arc welding process. After the first run, all weld

beads were “back ground” to the plate metal. Site Photo 20 shows the back grinding process while Site Photo 21 shows a weld grounded flush with the plate steel.



Site Photo 20. Grinding the outside weld back to the shell plating.



Site Photo 21. Close-up of bead ground flush with plate steel.

After grinding, a diesel penetrant test was performed on the exposed metal. However, procedures applicable in this sort of case required only an hour dwell time. Accordingly, diesel was sprayed on the outside of the tank and workers waited at least an hour to determine if the diesel penetrated the welds. If the diesel penetrated

the weld, the failed weld area was marked and subsequently rewelded and retested. Site Photo 22 illustrates how workers applied/sprayed the light diesel penetrant to a welded seam.



Site Photo 22. Diesel was sprayed on horizontal and vertical welds to conduct a penetrant test.

The second run welds were applied after outer shell plate welds passed the penetrant test. To complete the outer shell plate weld, the second run weld was applied along the bead where the weld was ground flush. In Site Photo 23, a worker completed the second run vertical welds on the outside of the shell plate. Site Photo 24 shows a completed second run vertical weld. The final, or third set of runs, was completed on the inside of the tank after all testing and retesting was successfully completed.



Site Photo 23. Worker completes second run vertical weld on a shell plate.



Site Photo 24. Completed second run on a vertical weld of a shell plate.

Based on a review of contract requirements and final design drawings, discussions conducted with contractor personnel and our on-site visit conducted on 1 August 2006, the assessment team found that construction was based on adequate design and work completed at the time of our site visit conformed to design requirements. Overall progress at the time of the site visit is shown in Site Photo 25.



Site Photo 25. Overall construction progress as of 1 August 2006.

Work Pending

At the time of the assessment team's site visit, the project was in the wall and floor fabrication stages of construction. Specifically, workers were in the process of completing vertical and horizontal welds on seven of eight of the tanks. Following completion of the walls and floors, the final major stage will be the fabrication and attachment of a steel roof assembly to each tank. In addition, all steel will have to be cleaned and properly finished with an epoxy coating.

Project Quality Management

Contractor's Quality Control Program

The Basic Contract Statement of Work for Worldwide Environmental Restoration and Construction (WERC) for contract FA8903-04-D-8669 defined the scope of a full range of construction and engineering activities to meet all customer requirements. The WERC SOW required the contractor to "*prepare, for AFCEE review and approval, a site-specific QPP for each TO*". Accordingly and in accordance with TO 0025 / Modification 4, Statement of Work dated 30 June 2005, the contractor prepared and submitted for AFCEE approval a Quality Program plan (QPP) that included a Construction Quality plan (CQP) and a Health and Safety plan (HSP) before construction started in September 2005.

The stated overall objectives of the CQP were to ensure that on-site construction activities were completed to AFCEE's satisfaction and met the project's established design criteria, construction plans, and specifications. The specific objectives of the CQP are to:

- Clearly define the on-site project scope of work;

- Establish an on-site QA project team consisting of experienced and qualified team members;
- Define the position and role of each team member, including the specific responsibilities, authorities, and reporting;
- Define on-site project QC mechanisms, including an inspection program;
- Specify procedures for obtaining qualified subcontractors and for monitoring the quality of the subcontracted work; and
- Determine quality assessment auditing procedures, which include notification of deficiencies, corrective actions, and recommended QC improvements.

In addition, the contractor was required to provide warranty oversight and training on all on-site equipment for a period not less than, but not limited to, six months after the field Period of Performance (POP) end date.

Government's Quality Assurance Program

Quality Assurance (QA) is the system by which the government fulfills its responsibility to be certain the Contractor's Quality Control system is functional and effective. Project and Contracting Office (PCO) Standard Operating Procedure (SOP) CN-100, Construction Contractor QC/QA Inspection and Reporting, specifies requirements for an adequate and effective Government QA program. PCO SOP CN-102, Contractor Quality Control/Quality Assurance Construction Deficiency Tracking, provides more specific guidance pertaining to the mechanics of a QC/QA deficiency tracking system and relevant Quality Assurance Representative (QAR) responsibilities. On-site QA personnel should monitor a contractor's processes to track construction deficiencies in order to assure acceptable corrective action while maintaining an audit trail and to ensure that new work is not placed on unacceptable work. In the case of the Al Kasik Water Storage Tanks project, AFCEE through its contractor, Versar Iraq Assistance Project (VIAP) was responsible for on-site QA. VIAP utilized trained engineers to serve as on-site Quality Assurance Representatives.

Quality Management

Engineering Regulation (ER) 1180-1-6 defines Quality Management (QM) as all control and assurance activities instituted to achieve the quality established by the contract requirements. Obtaining quality construction is a combined responsibility of the construction contractor and the government. Their mutual goal must be a quality product conforming to the contract requirements. A cooperative and professional working relationship should be established in order to realize this common goal.

Based on the inspector's review of QC and QA reports, discussions conducted with the contractor's construction and Quality Control managers, discussions conducted with onsite QA representatives, discussions conducted with the CMATT/J-7, and the assessment team's site visit, the assessment team found that the contractor's Quality Control and the U.S. Government's Quality Assurance programs were effective. As a result, the construction will very likely meet contract requirements when completed. For example, the contractor documented that welders were tested to ensure adequate skill. In addition, the contractor's records included documentation to support favorable results for concrete compression strength tests, weld vacuum tests, soil compaction tests, and diesel penetration tests. While QC reports were relatively simple and basic, they were very descriptive of deficiencies that required correction.

The QC manager confirmed that the focus was to describe and control deficiencies as a means to ensure compliant construction. On the other hand, the QAR used the prescribed AFCEE/VIAP Daily Quality Assurance Report. Accordingly, QA reports were formal and inclusive of administrative detail and daily construction activity. For example, QA reports included comments to describe daily (1) site conditions in terms of weather and number of personnel on site, (2) test observations, and (3) general construction activities.

Project Sustainability

Project sustainability was adequately addressed in the Task Order. The construction of the Water Storage Tanks consisted of a system of eight tanks of the same design. Covered, non-pressurized, water holding tanks offer a high degree of sustainability when properly constructed. Once the system of tanks is filled with water, it is designed to remain in place and supply clean water to the water distribution system. When completed, the project will likely be sustainable for years to come.

Conclusions

We reached the following conclusions for assessment objectives 1, 2, 3, 4, and 5. Appendix A provides details pertaining to Scope and Methodology and the limitations of this project assessment.

1. Determine whether project components were adequately designed prior to construction or installation.

The contract's design and specifications were specific enough to construct the facility because extensive and complex design work was not required to construct the project, consisting of eight similar water tanks. At the time of the assessment team's site visit, the construction of each of the eight 1 million liter water tanks appeared to conform to design requirements. As a result, there is a strong likelihood that the project, if completed, will be completed without major issues related to inadequate design.

2. Determine whether construction met the standards of the design.

At the time of the site visit, construction work completed complied with the design standards for the Al Kasik Water Storage Tanks project. Based on the assessment team's review of relevant documentation, discussions conducted with informed contractor and government personnel, and an on-site visit, the contractor's procedures to manage construction activity appeared effective. Quality Control, Quality Assurance, and numerous test reports confirmed that the project has been effectively monitored. As a result, the likelihood is high that additional construction will be completed in compliance with design standards.

3. Determine whether the Contractor's Quality Control and the Government Quality Assurance programs were adequate.

The contractor's Quality Control and the U.S. Government's Quality Assurance programs were adequate because the QC/QA systems employed by the contractor and government ensured effective Quality Management during construction. In accordance with requirements, the contractor submitted a timely Quality Program Plan (QPP) that included a sufficiently detailed Construction Quality Plan (CQP) and a Health and Safety Plan (HSP) before construction started in September

2005. In addition, the government's QA representative provided sufficient and effective oversight of the QC function. Quality Assurance reports were well written and descriptive of meaningful events and the project's overall status. As a result, additional construction will very likely meet contract requirements.

4. Determine if project sustainability was addressed.

Project sustainability was adequately addressed in the Task Order. The construction of the Water Storage Tanks consisted of a system of eight tanks of the same design and size. By their design, covered non-pressurized water holding tanks offer a high degree of sustainability when properly constructed. Once the system of tanks is filled with water, it was designed to remain in place and supply clean water to the water distribution system. If completed as designed, the project will likely be sustainable for years to come.

5. Determine whether project results were consistent with original objectives.

When completed, the system of water storage tanks should meet its intended objective to store and supply ample water for the water distribution system. The desirable outcome will result from effective project oversight of construction activities by contractor Quality Control and government Quality Assurance personnel. In addition, the project was adequately planned and designed before construction started. As a result, the water storage tanks should operate efficiently and improve overall water distribution within the service area, if built to the current standards of construction.

Recommendations and Management Comments

This report does not contain any negative findings or recommendations for corrective action. Accordingly, management comments were not required and none were offered by management. The results of this assessment were discussed with the Air Force Center for Environmental Excellence Program Manager and a Multi-National Security Transition Command - Iraq Engineering Staff Section (J-7) representative at the conclusion of fieldwork. In addition, the Assessment Team discussed the positive conditions reported with Coalition Military Assistance Training Team / Regional Support Unit personnel before departing Al Kasik. We appreciated the courtesies extended by Coalition Military Assistance Training Team / Regional Support Unit and contractor personnel. In addition, their help with billeting and travel to the site made for an effective and efficient site visit.

Appendix A. Scope and Methodology

We performed this project assessment from August through December 2006 in accordance with the Quality Standards for Inspections issued by the President's Council on Integrity and Efficiency. The assessment team included an engineer and an auditor.

In performing this Project Assessment we:

- Reviewed contract documentation to include Task Order 0025 Modification 0004 with Statement of Work applicable to the AL Kasik WST project and the WERC Statement of Work;
- Reviewed design package (drawings and specifications), the Construction Quality Plan, Quality Control and construction test reports, and Quality Assurance Reports;
- Interviewed the AFCEE PM, contractor's Construction Manager, contractor's Quality Control Manager, and Versar/VIAP Quality Assurance Representatives;
- Conducted an on-site assessment on 1 August 2006; and,
- Briefed the results of fieldwork with CMATT / RSU personnel at Al Kasik, the contractor's Construction and QC Managers, and AFCEE/VIAP QARs before departing Al Kasik. Upon completion of fieldwork, we briefed our conclusions with the AFCEE PM and a MNSTC-I / J-7 representative located in the International Zone.

Appendix B. Acronyms

AFCEE	Air Force Center for Engineering Excellence
AFMC	Air Force Material Command
CMATT	Coalition Military Assistance Transition Team
CQC	Contractor Quality Control
CQP	Construction Quality Plan
DCMA	Defense Contract Management Agency
HSP	Health and Safety Plan
IRRf	Iraq Relief and Reconstruction Fund
J-7	Engineering Staff Section
PCO	Project and Contracting Office
PM	Program Manager
POP	Period of Performance
PSI	Pounds per Square Inch
QA	Quality Assurance
QAR	Quality Assurance Representative
QC	Quality Control
QM	Quality Management
QPP	Quality Program Plan
RSU	Regional Support Unit
SIGIR	Special Inspector General for Iraq Reconstruction
SOW	Statement of Work
SOP	Standard Operating Procedure
TO	Task Order
VIAP	Versar Iraq Assistance Project
WERC	Worldwide Environmental Restoration and Construction
WST	Water Storage Tank(s)

Appendix C. Report Distribution

Department of State

Secretary of State

Senior Advisor to the Secretary and Coordinator for Iraq

U.S. Ambassador to Iraq

Director, Iraq Reconstruction Management Office

Inspector General, Department of State

Department of Defense

Secretary of Defense

Deputy Secretary of Defense

Director, Defense Reconstruction Support Office

Under Secretary of Defense (Comptroller)/Chief Financial Officer

Deputy Chief Financial Officer

Deputy Comptroller (Program/Budget)

Inspector General, Department of Defense

Department of the Army

Assistant Secretary of the Army for Acquisition, Logistics, and Technology

Principal Deputy to the Assistant Secretary of the Army for Acquisition,

Logistics, and Technology

Deputy Assistant Secretary of the Army (Policy and Procurement)

Assistant Secretary of the Army for Financial Management and Comptroller

Chief of Engineers and Commander, U.S. Army Corps of Engineers

Commanding General, Gulf Region Division

Auditor General of the Army

Department of the Air Force

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U.S. Central Command

Commanding General, Multi-National Force - Iraq

Commanding General, Joint Contracting Command – Iraq/Afghanistan

Commanding General, Multi-National Corps – Iraq

Commanding General, Multi-National Security Transition Command – Iraq

Commander, Joint Area Support Group – Central

Other Defense Organizations

Director, Defense Contract Audit Agency

Other Federal Government Organizations

Director, Office of Management and Budget
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Inspector General, Department of the Treasury
Inspector General, Department of Commerce
Inspector General, Health and Human Services
Inspector General, U.S. Agency for International Development
Mission Director – Iraq, U.S. Agency for International Development

Congressional Committees and Subcommittees, Chairman and Ranking Minority Member

U.S. Senate

Senate Committee on Appropriations
 Subcommittee on Defense
 Subcommittee on State, Foreign Operations and Related Programs
Senate Committee on Armed Services
Senate Committee on Foreign Relations
 Subcommittee on International Operations and Terrorism
 Subcommittee on Near Eastern and South Asian Affairs
Senate Committee on Homeland Security and Governmental Affairs
 Subcommittee on Federal Financial Management, Government Information and International Security
 Subcommittee on Oversight of Government Management, the Federal Workforce, and the District of Columbia

U.S. House of Representatives

House Committee on Appropriations
 Subcommittee on Defense
 Subcommittee on Foreign Operations, Export Financing and Related Programs
 Subcommittee on Science, State, Justice and Commerce and Related Agencies
House Committee on Armed Services
House Committee on Government Reform
 Subcommittee on Management, Finance and Accountability
 Subcommittee on National Security, Emerging Threats and International Relations
House Committee on International Relations
 Subcommittee on Middle East and Central Asia

Appendix D. Project Assessment Team Members

The Office of the Assistant Inspector General for Inspections, Office of the Special Inspector General for Iraq Reconstruction, prepared this report. The principal staff members who contributed to the report were:

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